



Attorney Docket No.: USRA - SWCNT VI

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

RECEIVED  
MAY 29 2003  
TC 1700

In re the PATENT application of

Mark S. F. CLARKE et al.

Serial No: 09/932,986

Filed: August 21, 2001

Group Art Unit: 1754

Examiner: LISH, P.

For: PRODUCTION OF STABLE AQUEOUS DISPERSIONS OF CARBON NANOTUBES

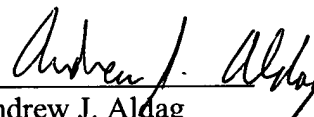
**PROPOSED CORRECTIONS TO THE DRAWINGS**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, Virginia 22313-1450

Sir:

Attached herewith are proposed drawing corrections to Fig. 1A, with proposed corrections in red ink as required by 37 CFR 1.121(d). In particular, it is proposed to correct Fig. 1A by changing "BBDA" to --BDDA--. Formal drawings will be submitted incorporating these changes upon receiving approval from the Examiner.

Respectfully submitted,

  
Andrew J. Aldag  
Registration No. 40,483

EDELL, SHAPIRO & FINNAN, LLC  
1901 Research Boulevard, Suite 400  
Rockville, Maryland 20850-3164  
(301) 424-3640

Hand-Delivered: May 28, 2003

## THE NANOTUBE COMPANY

Hyperion Catalysis International is the world leader in carbon nanotube development and commercialization. Carbon nanotubes are used as an electrically conductive additive in plastics and are showing increasingly important potential in a wide range of applications.

Hyperion Catalysis International, Inc. was founded in 1982 for the purpose of developing novel forms and morphologies of carbon for advanced materials and systems. Hyperion Catalysis' flagship technology is a conductive, vapor grown multi-walled carbon tube. These tubes are known commercially as **FIBRIL**™ nanotubes. Since the original discovery of carbon nanotubes in 1983, Hyperion Catalysis has devoted substantial resources to improving the technology of their manufacture and application.

Hyperion Catalysis now supplies **FIBRIL**™ nanotubes pre-mixed in a variety of plastics into a growing number of automotive and electronics industry applications. In these applications, the unique properties of nanotubes allow our customers to produce finished products whose combination of properties and performance simply cannot be equaled using other conductive materials.

Additional technologies are being developed and it is expected that they will open a wide range of exciting applications for carbon nanotubes.

Applications currently focus on.....

**Electronics:**

Disk Drives  
Semi-Conductors  
Manufacture

**Automotive:**

Body Panels  
Fuel Systems

Composites of nanotubes in plastics are used in automotive fuel systems and sensitive electronics environments to control and dissipate the build-up of dangerous static charges. Nanotube loaded automobile body panels can be electro-statically spray painted, eliminating the need for a costly primer coat.

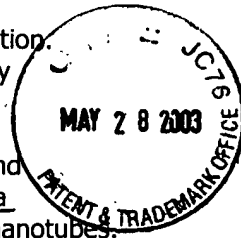
Hyperion Catalysis International, Inc.

38 Smith PL

Cambridge, MA 02138

Phone: 617-354-9678

Email: [info@hyperioncatalysis.com](mailto:info@hyperioncatalysis.com)



RECEIVED  
MAY 29 2003  
TC 1700

## Nanotube Technology



A variety of materials, including carbon fiber, metallic fibers and carbon blacks are available for imparting various levels of electrical conductivity to plastics. Some plastic applications include static dissipation in a variety of environments, and electrostatic spray-painting. In systems such as these, electrical conductivity is achieved when an adequate network of conductive particles or fibers is established within the polymer. Graphite nanotubes are a relatively new entry in this area. They are morphologically ideal in such applications as they establish a conductive network at low loadings, resulting in minimal degradation of polymer physical properties. In critical applications, isotropic electrical conductivity, or thin walled or dimensionally stable molded parts, graphite nanotubes are often a fit.

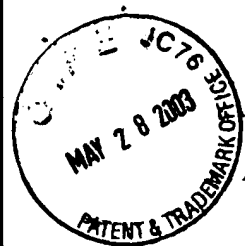
**Properties of Graphite Nanotubes**

Commercially manufactured graphite nanotubes are produced from low molecular weight hydrocarbons in a gas phase, catalyzed reaction. They are hollow, multi-walled tubes with a graphitic microstructure.

Graphite nanotubes are multi-walled. The number of walls varies, with 8 to 15 being typical. The outside diameter of the tube is approximately 10 to 15 nanometers. The inside diameter is approximately 5 nanometers. Nanotubes are typically tens of microns in length. This results in aspect ratios on the order of 100 to 1000. Nanotubes are orders of magnitude smaller than carbon fibers and are morphologically distinct from the familiar, nodular carbon black aggregates.

Graphite nanotubes are produced from raw materials of high chemical purity under stringent operating conditions. They are, therefore, used in applications where cleanliness is a critical performance parameter.

As produced, graphite nanotubes exist in tangled aggregates. In order to achieve optimum performance as a conductive additive, these aggregates must be untangled via shear during compounding.



RECEIVED  
MAY 29 2003  
TC 1700

Attorney Docket No. USRA - SWCNT VI

PATENT

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re application of Mark S. Clarke et al.

Serial No.: 09/932,986 ✓

Examiner: Lish, P.

Confirmation No.: 6829

Art Unit: 1754

Filed: August 21, 2001

For: PRODUCTION OF STABLE AQUEOUS DISPERSIONS OF CARBON NANOTUBES

---

Commissioner for Patents  
P.O. Box 1450  
Alexandria, Virginia 22313-1450

**TRANSMITTAL OF RESPONSE**

Enclosed are the following documents in response to the Office Action mailed February 28, 2003 for the above-identified application:

- ☒ Amendment/Response, including an Appendix (13 pages total)
- ☐ Petition for Extension of Time
- ☒ Proposed Corrections to the Drawings (2 pages)
- ☐ Information Disclosure Statement
- ☐ Notice of Appeal
- ☐ Associate Power
- ☐ Revocation and New Power
- ☐ Change of Address
- ☐ Return receipt postcard
- ☐ Check No. \_\_\_\_\_ in the amount of \$ \_\_\_\_\_ for the total fee as calculated below
- ☒ Other: Declarations of Daniel L. Feeback and Mark S.F. Clarke (8 pages total)

The fee has been calculated as follows:

	NO. OF CLAIMS	CLAIMS PREVIOUSLY PAID FOR	EXTRA CLAIMS	RATE	FEE
Total Claims	18	36	0	x \$18.00	00.00
Independent Claims	2	3	0	x \$84.00	00.00
If multiple dependent claims are presented, add \$280.00					00.00
Total Amendment Fee					00.00
<input type="checkbox"/> Applicant claims Small Entity Status (subtract 50% of Total Application Fee)					
Other fees: (specify)					00.00
<b>TOTAL FEE DUE</b>					00.00

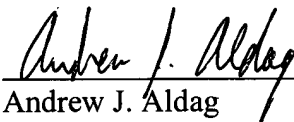
- ☐ A check for the total fee is attached.
- ☐ Please charge \$ to Deposit Account No. 05-0460 for the total fee. This paper is being submitted in duplicate.
- ☒ The Commissioner is hereby authorized to charge any additional appropriate fees under 37 C.F.R. §§1.16, 1.17, and 1.21 that may be required by this paper, and to credit any overpayment, to Deposit Account No. 05-0460.

Dated: May 28, 2003

**EDELL, SHAPIRO & FINNAN, LLC**  
**CUSTOMER NO. 27896**  
1901 Research Boulevard, Suite 400  
Rockville, MD 20850  
(301) 424-3640

Respectfully submitted by  
**EDELL, SHAPIRO & FINNAN, LLC**

By:

  
Andrew J. Aldag  
Reg. No. 40,483